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[Title of the Invention:]

Bicycle Lock

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[Description]

The invention relates to a lock for bicycles.

[Prior Art]

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Bicycles are secured against theft with the aid of special locks. However, absolute security cannot be obtained; even the most stable and complicated locks can be opened by unauthorized persons with appropriate efforts. However,
15 most locks offer good protection against spontaneous theft.

In the German Laid-Open Specification DE 42 32 540 A1, a lock for two-wheeled vehicles (with the wheels one behind the other) is described. The lock consists of a tubular
20 container in which a centrally supported drum is arranged and around which a rope is wound. One end of the rope is fastened to the drum so as to be undetectable. The other end of the rope supports a safety lock half. To lock it, the safety lock half can be inserted into a second safety
25 lock half fastened to the top end of the container so as to be undetectable.

The disadvantage of this bicycle lock and all other known bicycle locks is that it is fastened - if at all - to the
30 bicycle with a special holding device and that the seat support and the seat connected with it are not included in the protection.

[Object of the Invention]

The object of the invention is to provide a bicycle lock
5 which can be fastened to the bicycle without a special holding device and with which both the bicycle and the seat support and the seat connected thereto are secured.

This object is solved with an invention having the features
10 of the main claim. Advantageous embodiments can be found in the subclaims.

[Examples]

15 The invention will be described in the following with reference to an embodiment, in which

Figure 1 shows a longitudinal section through the bicycle lock according to the invention.

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Figure 2 shows a variation of the bicycle lock according to Figure 1.

Figure 3 shows a bicycle lock according to the
25 invention combined with a rear light.

Figure 4 shows a bicycle lock according to the invention combined with an acoustic signalling device and a transmitter.

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Figure 1 shows a bicycle lock 1 according to the invention which consists of a housing 2 and a drum 3 that is rotatably mounted in the housing 2, a rope 4 which is completely wound

around said drum 3. The housing 2 has an opening 6 through which the rope 4 is guided outward. The rope 4 is fastened to the drum 3 with one end and supports a half-lock 5a on the other end directed toward the outside, said half-lock 5a 5 can be connected with the half-lock 5b situated in the housing 2 and can be fixed there by means of a safety lock (not shown).

The safety lock 5 is preferably configured as a combination 10 lock which is opened via a combination to be set. However, the lock 5 can also be locked and unlocked e.g. via a radio signal.

A coil spring 7 is arranged between the housing 2 and the 15 drum 3, said coil spring 7 becoming tight when the drum 3 is turned and the rope 4 is being pulled out. When the load is gone, the coil spring 7 turns the drum 3 back until the rope 4 is wound up or tightened.

20 The housing 2 has a centrally situated cylindrical opening 8 in which a tube 9 is arranged. The outside diameter of the tube 9 corresponds to the diameter of the opening 8 and the inside diameter of the tube 9 corresponds to the diameter of the seat support 10.

25 The tube 9 is connected with the housing 2 so as to be resistant to torsion. This can take place as follows: on one end, the tube has at least one nose 11 arranged on the periphery, said nose 11 engaging in a recess 12 of the 30 housing 2 which corresponds to the shape of the nose.

The tube 9 is fixed on the seat support 10 to ensure a defined position of the bicycle lock 1. In this embodiment,

the tube 9 is fixed by a nut 13 which presses the end slit over the length of the thread (not shown) of the tube 9 against the seat support 10 and in this way produces a force-fit connection between seat support 10 and tube 9. At 5 the same time, the nut 13 presses the housing 2 against the noses 11 of the tube 9.

As shown in Figure 2, the tube 9 can be omitted and be designed as part of the housing 2. In this way, only a 10 fastening element corresponding to the thread and the nut 13 must be provided; this ensures the firm connection between the housing 2 and the seat support 10. The connection between the housing 2 and/or the tube 9 and the seat support 10 is not restricted to the form shown, but can be 15 accomplished by means of other known connecting elements. However, the use of tubes 9 has the advantage that, by using tubes 9 having different inside diameters or inside cross sections, the bicycle lock 1 according to the invention can be adapted to seat supports 10 of various diameters or 20 cross-sectional shapes.

According to a further embodiment, the bicycle lock 1 according to the invention is combined with a reflector 14. The position of the bicycle lock 1 on the seat support 10 25 and its defined position offer optimal prerequisites for the arrangement of a reflector on the bicycle lock 1. Figure 3 shows the connection of the bicycle lock 1 of Figure 1 with a reflector 14. The reflector 14 consists of a transparent cover 15 which is connected with the housing 2. Light diodes 16 which are supplied with power by a battery 17 are 30 arranged below the cover 15. The electrical connection is made or interrupted by a switch 18.

According to a further embodiment (Figure 4), the bicycle lock 1 according to the invention is combined with an acoustic signalling device 19 which is activated when the rope 4 is cut. The signalling device is supplied with power by the battery 17 and is set in such a way that the acoustic signal sounds for about 30 seconds at such a volume that the signal is audible for up to a distance of 300 m. In addition, the acoustic signalling device can be connected with a motion sensor (not shown) which already releases an alarm when the bicycle is subjected to a certain number of movements within a specific time.

A further embodiment of the bicycle lock according to the invention provides that the acoustic signalling device 19 is provided with a transmitter 20 which, as soon as the signalling device is actuated, transmits a corresponding message to the mobile telephone of the owner and/or which sends a radio signal that makes it possible to locate the bicycle lock (and with it the bicycle) via locator systems such as, perhaps, GPS.

The reflector 14 is electrically connected to the safety lock 5 in such a way that it can only be activated when the safety lock is not closed. This prevents the battery 17 from being discharged with the goal of preventing the release of an alarm.

The bicycle lock according to the invention can be designed in such a way that its operation (the locking and unlocking of the lock 5; switching the reflector on; ending the alarm, etc.) takes place via a radio remote control, the remote control itself can be secured by a PIN. The advantage of

this is that only the owner of the remote control is able to operate the bicycle lock 1.

5 [List of Reference Numbers]

- 1 Bicycle lock
- 2 Housing
- 3 Drum
- 10 4 Rope
- 5 Lock
- 6 Opening
- 7 Coil spring
- 8 Opening
- 15 9 Tube
- 10 Seat support
- 11 Nose
- 12 Recess
- 13 Nut
- 20 14 Reflector
- 15 Cover
- 16 Light diodes
- 17 Battery
- 18 Switch
- 25 19 Signalling device
- 20 Transmitter